

The Immigration of Lepidoptera to the British Isles in 1978

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1978 was not a great year for immigrants, comparable to 1976 or 1968; but it shows a pattern which is interesting both in timing and in content of species. There was no early invasion such as occurred in 1977, and immigrants were hardly seen before June. None of the scarcer butterflies were reported. Throughout the summer the usually common species, both butterflies and moths, were much below their usual numbers, and the poor weather which lasted until early August probably reduced local breeding by those which did arrive. Surprisingly, however, single examples of two species new to the British list, which were probably immigrants, were caught in mid June and late August. There was little trace of immigration from northern Europe or beyond, which was prominent in 1976 and 1977. Few of the less common migrants were reported in September. But in the second week of October in Britain, rather later in Ireland, there came a dramatic change with a widespread invasion, which reached far northwards and inland and included many rare species in unusual combination. This was followed by several successive waves of immigrants from the last week of October through November and possibly even in early December. These were dominated by the largest influx of *Mythimna unipuncta* (Haworth) since 1966, which, however, showed little penetration inland from the south and west coast.

During the first three weeks of June *Autographa gamma* L. became fairly numerous on the south coast of England, a total of 76 being recorded in the month in a light trap at Peacehaven, East Sussex, with a peak of 14 on 19th; but many recorders have commented on its unusual scarcity elsewhere, even on the coast, both then and later. There were also a few records of *Agrotis ipsilon* Hufn., *Peridroma saucia* L., and *Udea ferrugalis* Hübn. scattered in date and place, and of a single *Orthonama obstipata* F. at Peacehaven on 9th; but their usually commoner companion, *Nomophila noctuella* D. & S. was reported only singly in two places on 8th and 11th. There was, however, a surprising high-light in the capture on 14th by B. G. Withers (*Ent. Rec.* 90: 333) in his trap at Stoborough, Dorset of a specimen of *Terpnomicta trimaculata* Vill., which was accompanied by several *A. ipsilon*. This species, new to the British list, is known on the Atlantic coast of France at least as far north as Nantes.

July was a barren month until its last few days. The unusual immigrants remained scarce, except for *Phlogophora meticulosa* L., which was common on the south coast and showed a marked peak at Peacehaven on 12th, when it was accompanied by one of the few *Agrius convolvuli* L. reported this year;

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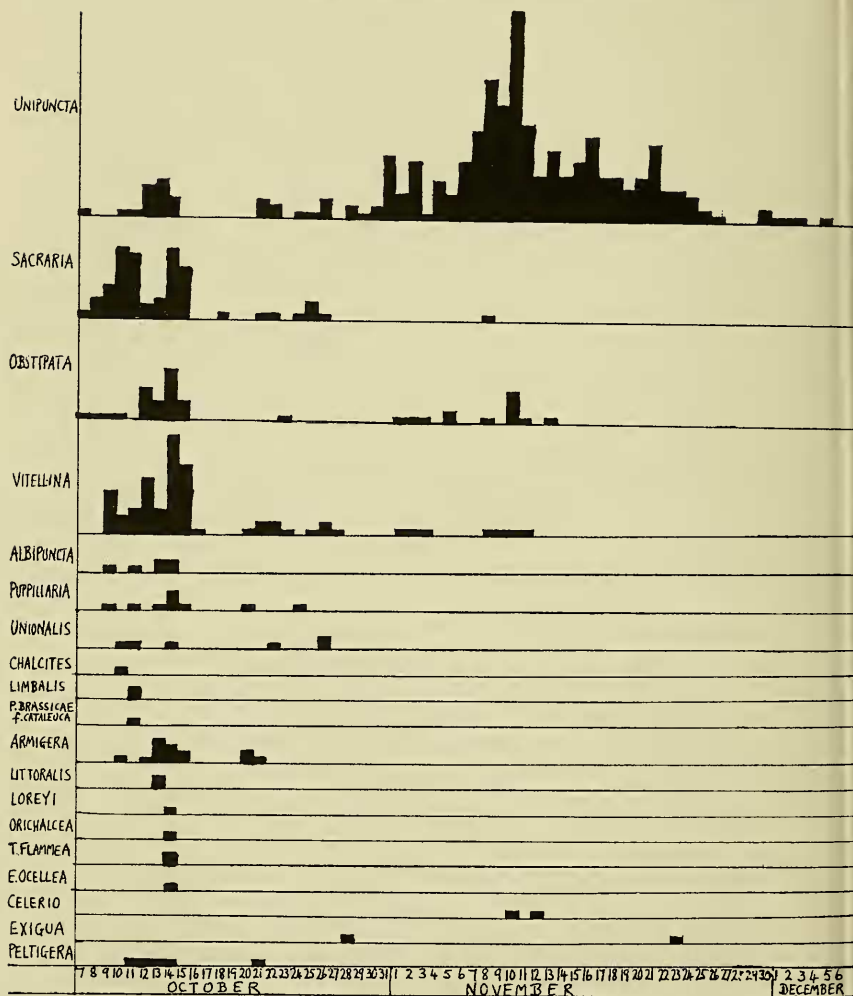
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there was also a single *O. obstipata* at Caversham, Berks. on 25th. *P. meticulousa* is a common resident as well as an immigrant, and there may often be doubt about the origin of examples seen early and late in the year; but as its overwintering resident larvae usually produce moths in June and those of the second generation from late August onwards, it is probable that most July moths are immigrants.

In late July and August the picture improved a little. *A. gamma* became common on the south coast, some 600 being trapped at Peacehaven, with peaks of over 20 on 28th and 30th July and 8th, 19th and 23rd August. The first *Palpita unionalis* Hübn. was recorded at Bradwell-on-Sea, South Essex, on 29th and the only *Hyles gallii* Rott. of the year on 5th August; there was another *O. obstipata* in West Cornwall on 13th August; and on 18th a male *Clostera anachoreta* D. & S., last recorded in 1976, was caught at light at Dungeness, East Kent, along with a few *A. gamma* (*Ent. Rec.*, 90: 274). This was probably a short distance visitor from across the Channel, as attempts to find more moths or larvae later were unsuccessful. Late in the month, and extending into early September there appears to have been a small, probably mainly longer distance migration. Single examples of *H. convolvuli* L. were recorded at Compton Chine, Isle of Wight, along with one of the few *Colias croceus* Fourc. of the year, and at Micheldever, North Hampshire, on 26th, and at Speke, North Lancashire, on 28th. On 27th August Mr. J. Porter caught a small moth at the Lizard, West Cornwall which was later identified at the British Museum (Natural History) and exhibited to the British Entomological & Natural History Society as *Athetis hospes* Frr., new to the British list (*Ent. Rec.*, 91: 22). This brownish Noctuid, related to our resident *A. pallustris* Hübn., has its nearest localities in the Gironde area of south west France. On 4th September, at the end of this spell of south westerly winds, continuous streams of *Pieris brassicae* L. and *P. rapae* L. were seen to arrive at the Lizard, a single worn *Cynthia cardui* was noted on the beach at Strete in South Devon, and at night among some 60 species of moths trapped at Dittisham on the estuary of the Dart there were one *Mythimna albipuncta* D. & S. and several *A. gamma* *gamina* Stdgr. The rest of September was almost blank, except for an extraordinary capture of a female *M. unipuncta*, the first of the year, at Winchburgh, on the outskirts of Edinburgh; three others were reported in West Cornwall and Scilly on 23rd and 29th.

The most varied immigration of the year began in England on the night of 7th October, reached its height probably on 13th or 14th, and then ceased abruptly; in south west Ireland the timing was later by nearly a week. During this period over thirty immigrant species were recorded; the numbers and dates of the scarcer ones are shown in histograms A and B. The most notable were two examples, both worn, of *Spodoptera littoralis* Bdv. at Lymington, South Hampshire and Stoborough, Dorset; two *Trigonophora flammea* Esp. and a single *Mythimna loreyi* Dup. at Swanage (*Ent. Rec.*, 90: 338); one *Diachrysis*

HISTOGRAM A
SCARCE IMMIGRANT LEPIDOPTERA: NIGHTLY RECORDS 7 OCTOBER TO 5 DECEMBER 1978
(GREAT BRITAIN)



orichalcea F. at Southrop, Glos., and another at Fountains-town, co. Cork; a *Chrysodeixis chalcites* Esp. found on a house wall far north in Inverness-shire; *Cyclophora puppillaria* Hubn., of which there were five in Hampshire, two in Dorset, and one as far north as Alveston in Warwickshire, for which it is a new county record; also a single capture of the immigrant Pyrale *Euchromius ocella* Haw. at Usk, Monmouthshire and two of *Uresiphita limbalis* D. and S. at Sparsholt, North Hampshire and Stoborough, Dorset.

The captures of two *S. littoralis* are particularly interesting because, though its larvae are sometimes imported with chrysanthemum cuttings and flowers and at one time threatened to become a pest in English glasshouses, there seems to be only one record, in 1960, of a moth found in the wild. These captures now confirm its status as an occasional natural immigrant. Of *T. flammea* there have been only about eight records in England since the end of its period of residence in Sussex in 1892; it is a southern species, but reaches to Normandy in France and is resident in the Channel Isles. *D. orichalcea* is a tropical and sub-tropical species, probably not established north of the Mediterranean; there are about twenty records of it in England, the last at Ringmer, East Sussex, on 10th October 1977, and two in Ireland in 1946 and 1964. *C. chalcites*, also sub-tropical and even rarer in Britain, was last recorded in 1965 in several places on the south coast; the present record at Insh in Inverness-shire is paralleled by one of *Rhodometra sacraria* L. at Fort Augustus on the same date. Of the little Crambid *E. ocella* there are less than twenty records, most of them of the white form in early spring, when it may be less easily overlooked. Of *C. puppillaria* and *U. limbalis* there are still less than fifty records. The finding of a female *P. brassicae* f. *cataleuca* Rober, the form found on the Mediterranean coast of France and eastwards, outside a light trap at Bramley, Surrey at 11 p.m. on 11th October both indicates nocturnal migration by this butterfly and possibly gives a clue to the origin of this migration.

The other scarce immigrants reported in Britain during this period were *R. sacraria* (over 50), *M. vitellina* (over 50), *O. obstipata* (21), *M. unipuncta* (17), *H. armigera* (11), *M. albipuncta* (6), *H. peltigera* (3), *P. unionalis* (3). Among the common immigrants, *P. meticulosa* was dominant, with large clearly migratory swarms reported in and around light traps in Sussex, Surrey and Oxfordshire. *A. gamma*, though more plentiful than before, remained in most places below normal numbers, a sudden peak of 63 at Peacehaven, East Sussex, on 14th October being apparently exceptional. *P. saucia* and *A. ipsilon* were reported widely, but in small numbers; and there were still fewer *N. noctuella* and *U. ferrugalis*. Three or four *C. croceus* were seen near Helston, West Cornwall, on 12th and 13th October, and two at Brook, Kent on 15th October. *Vanessa atalanta* L. was reported in several places and in some numbers in October; but it is not clear that these were associated with the main immigration. The general impression

is of unusual diversity of species and spread northwards and inland, but in rather small numbers for individual species, except perhaps for *P. meticulosa*. The usual large immigration of *H. convolvuli* between late August and early October was hardly represented and, except for a single diurnal record of *Macroglossa stellatarum* L. at Maltravers, Dorset on 19th October, and one other at St. Mary's, Scilly Isles, on 14th October, the other migrant Sphingidae seem to have been absent.

The immigration of 8th to 15th October occurred after a long period in which the air stream reaching Britain, except possibly Cornwall and Devon, was obstinately north westerly, from the north Atlantic. The change began about 4th October, when winds began to blow round an area of high pressure off the north west tip of Spain. This moved slowly east across Europe, causing fronts over Britain first from S.W. later from S.E. and S., and finally, as low pressure became centred over the Azores, from S.W. again. This diversity of directions, permitting various points of origin abroad, may have accounted for the large and unusual coverage of species. Immigrants were first recorded on the night of 7th and, in greater numbers, on 8th and 9th. The long interval between the change of wind and the first records, and the fact that these covered mainly *R. sacra* and *M. vitellina*, suggest a distant origin, perhaps in the deserts of north west Africa. Some of the species recorded in the middle of the week, such as *P. brassicae* f. *catuleuca*, *C. pupillaria*, *H. armigera*, and also *M. unipuncta*, which was reported "in thousands" at Lourdes in south west France in October, may have come north from the Mediterranean coasts. The recorded peak of over 50 examples of 13 scarce immigrant species on 14th probably included both new and previous arrivals. Mr. Peter Davey has been good enough to trace meteorological back-tracks of moths arriving at Swanage on that night, on alternative assumptions that, flying directly down wind, they were wholly carried by it, or that they added 5½ m.p.h. by their own flight. The first track points to an origin 48 hours earlier near the western end of the Pyrenees; the second to northern Spain, Portugal, or even the Canary Islands. For species which were first recorded on the nights of 13th or 14th (*D. orichalcea*, *S. littoralis*, *M. loreyi*, *T. flammea*, *E. ocella*) what we know of their distribution abroad gives preference to the Canary Islands, except in the case of *T. flammea*; and this may also be preferable on physiological grounds, since it seems unlikely that such species could maintain height for long distances by gliding flight without impetus of their own. It is interesting that on this night of highest record (and also on that of the later peak of 10th November) the moon was almost full: a condition which is usually unfavourable, if not the flight of moths, at least to their attendance at light traps; but these were also Saturday nights, when lepidopterists are notoriously active in the field!

On 16th October winds over south England veered sharply to north west and north, and the few records of immigrants during the following week probably represented survivors rather than new arrivals. But from 25th October, with warm fronts again from the south west, it is clear that immigration began again, and this seems to have built up further during the first half of November with almost continuously south west and even south winds, sometimes of gale force, and with unseasonably high temperatures. The records of scarce immigrants reached a high peak on 10th November, and then fell irregularly, with minor peaks which may represent either fresh immigration or survivors. The prolonged warm spell was ended after 24th November by a week of cold, with severe frosts at least away from the coast, and it is possible that subsequent records to 5th December were of fresh arrivals.

The immigrations of late October and November had only a limited species content, being dominated by *M. unipuncta* of which about 270 were recorded in Britain. Until the middle of November they were accompanied by small numbers of *O. obstipata*, and by a late *R. sacraria* on 8th. There were also two *Spodoptera exigua* Hübner, which had not been previously recorded in Britain, and single examples of *Hippotion celerio* L. at Sway, South Hampshire, West Wittering, West Sussex, and Waterbeach, Cambs., for which most past records have been in October and November. Records of *M. unipuncta* extended round the coasts from Suffolk on the east to Westmorland, Isle of Man, and the Isle of Canna on the west; but less than a dozen examples were reported more than ten miles from the sea. Among the common species there were many more *U. ferrugalis* and *P. saucia* than earlier in the year, moderate numbers of *P. meticulosa* and *A. gamma*, and at least one of that rarity of 1978, *N. noctuella*. Apart from *M. unipuncta*, this composition agreed well with those of autumn immigrations in previous years, though it was considerably later.

For Ireland we have records from only one trap, which was almost continuously operated from 20th August to 26th September and from 7th October to 11th November near the coast at Fountainstown, co. Cork, and from another observer for shorter periods in October and November at Killarney, co. Kerry. At Fountainstown little of interest was seen in August or September except one *H. armigera* on 24th September and an example of *Discestra trifolii* Hufn., which had not been reported in Ireland since 1930 and may be only immigrant there. The timing and pattern of the mid October influx differed considerably from that in Britain. It began very suddenly on 13th October, and seems to have lasted for only three or four nights, with survivors merging with another small influx late in the month. The dominant species was already *M. unipuncta*, of which 48 were recorded from 13th to 15th and a further 13 by 22nd. In this period *R. sacraria* counted 25 (plus 6 at Killarney, where the only other migrants seen were half a dozen *A. gamma*); *N. noctuella* 20; *O. obstipata* and

P. unionalis seven each; *M. vitellina*, two; *D. orichalcea*, one on 20th; *A. gamma* very few. But singles of *Trichoplusia ni* Hüb. on 13th and of *A. atropos* L. on 14th, and a pair of *S. exigua* on 15th represented species which were not recorded in Britain at this time. Arrivals seem to have begun again about 23rd October, and after gales and cold nights from 5th to 8th November what was probably another wave built up to a peak on 11th, much as in Britain. These later immigrations added a further 53 *M. unipuncta*, 2 *R. sacra*, 17 *O. obstipata*, and 5 *N. noctuella*. The total of 114 *M. unipuncta* in a single trap at Fountainstown was approached in Britain only by that of 95 similarly recorded at Hayling Island, South Hampshire.

Little information is yet available about migration in 1978 on the Continent. In France, during an expedition by road from Calais to the south east, from 23rd July to 3rd August, one of the authors noted that the usual migratory butterflies appeared to be very scarce, as in England, and during some night collecting in Dauphiny little was seen of the migratory moths. Later, we have been informed that *M. unipuncta* was seen "in thousands" at Lourdes in the south west, and that it was also recorded in November near Charleroi and Liège in Belgium, where also three examples of *S. littoralis* were caught near Brussels in October. From the Netherlands, however, a barren year is reported.

The authors acknowledge gratefully records received directly or indirectly from over 80 recorders, whose names are listed in Annexe I, and also local histograms from Mr. Colin Pratt and meteorological back-tracks from Mr. Peter Davey. Records of the scarcer immigrant species are detailed in Annexe II, where those for each species are arranged in geographical order by vice counties, recorders' initials being given where there are several for the same locality. Full details for the common species were not generally requested and except in some special cases these have been referred to in the main text only. Nearly all records refer to attendances of moths at light, many of them in regularly monitored garden traps; but there are also some important field records and diurnal observations. Dates stated here are as far as possible those of lighting up, *not* those of trap clearance on the following day; but it has not been practicable to check this in all cases, so that the daily totals shown in the histograms or otherwise referred to may be subject to a small margin of error. The localities recorded are rather more numerous than those named in "Annual Migration Records, 1966 and 1967" (R. A. French, 1971, *Entomologist* 104: 204-218), years in which immigration appears to have been on a scale broadly similar to that in 1978.

In addition to the species listed, records of some "suspected immigrants" need consideration. A single specimen of *Meganola albula* D. & S. was trapped at Bradwell-on-Sea, S. Essex, on 28th July. Previous examples which have been noted there

in ten of the years from 1949 to 1973 have been regarded as migrants, and occasional records in Suffolk and Lincolnshire in the past are also suggestive of immigration. No resident colony appears to be known in Essex; but several exist, or have existed, both on the coast and well inland, from Kent to Devon, and it seems possible that the Bradwell specimens may have come from a local Essex colony which has been overlooked because of the small size of the moth and its superficial resemblance to several common micro-lepidoptera. Of *Rhyacia simulans* Hufn. one was caught at Boughton-under-Blean, East Kent, on 7th September, and no less than nine at Bradwell-on-Sea, and elsewhere in Essex between 29th July and 10th September. Some at least of these were of a darker form than those found in Gloucestershire (cf. *Ent. Rec.*, 90: 324). There has been only one previous record in Essex (at Coxtie Green in 1974) and none confirmed in Kent. But occasional past occurrences of the species elsewhere far from its normal range in Britain are more suggestive of internal vagrancy in years of abundance than of immigration. Of *Senta flammea* Curtis one specimen was found on the top of a reed in Pevensey Levels, East Sussex, on 14th June. There have been other occasional records of it in Sussex and Kent in past years, but no resident colony there is known. The possibility of short distance migration across the Channel from the marshes of the Somme or the Pas de Calais, where the species is locally abundant, should not be excluded. Its nearest known British localities are probably in the fens of East Anglia. Finally, a specimen of the Monarch, *Danus plexippus* L. was seen at Epsom, Surrey, on 11th September, which may or may not have been an escape from captivity.

Some warnings must be given about the use and interpretation of these records. The coverage, though geographically wide, is uneven and has important gaps. Because there are many more potential recorders in south east England than in any other region the relative frequency of immigrants there is likely to be considerably overstated. Regular recordings are especially few or absent for the south western English counties, south Wales, and most of Ireland, where in past years many immigrants have been reported. The authors very much hope that further records may be received both from these places and elsewhere, for possible publication in a supplement. It is also hoped to continue the collection and publication of migration records in 1979.

Precise determination of the timing of the arrival of migrations is difficult. Simultaneous records after a blank period are a reasonably safe guide in most cases; but thereafter records may represent a mixture of survivors and further arrivals. Moreover, high numbers on particular nights may be due to improved flying conditions or more recording, rather than to new arrivals. Further, since the life span of immigrants after arrival is unknown, and may well vary between species and with temperatures, there is often uncertainty for how long